The Dual Consequences of Authoritarian Powersharing

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July 19, 2020

Abstract

Some dictators share power with the opposition, whereas others create exclusionary/repressive regimes. Either strategy carries drawbacks: sharing power brings rivals closer to the center and concedes more rents, but excluding the opposition may leave no alternative to fighting. I develop a dynamic model to study this powersharing dilemma. A ruler chooses how much de facto power to share with the opposition. More powersharing yields two consequences: (1) more frequent periods in which the opposition can mobilize, and (2) higher probability of winning a conflict. The ruler considers sharing power only if doing so pushes the regime from a conflictual to a peaceful path. However, if the lost rents from sharing power are too high, the ruler will exclude maximally despite knowing she could have shared enough power to guarantee survival. In other circumstances, sharing power pushes the regime from a peaceful to a conflictual path, which triggers regime-preserving exclusion.

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All dictators face threatening opposition groups. Rulers can either accommodate the opposition by sharing power in the central government, or exclude them. Which direction enhances regime survival? Under what conditions will a ruler choose to share power? Existing research generates ambiguous implications.

Many posit that sharing power bolsters regime durability. Delegating decision-making authority and rents to the opposition—e.g., institutionalized parties and broad ethnic representation in the cabinet—reduces their incentives to challenge the ruler, whether in a coup (Svolik 2012; Sudduth 2017; Meng 2019) or rebellion (Cederman et al. 2013). Similarly, scholars of social revolutions posit that exclusionary regimes are more vulnerable to mass revolutions by leaving "no other way out" for society. Such regimes squeeze urban elites and intellectuals, who pose a serious threat of overthrow when they form broad coalitions with peasants (Goodwin and Skocpol 1989; Goodwin 2001; Chehabi and Linz 1998, 41-45). When these regimes indiscriminately repress nascent social movements, they sometimes escalate rather than deter mobilization—the "repression-dissent" paradox (Moore 2000; Ritter 2014).

However, other research stresses the drawbacks of sharing power. Shifting power toward the opposition reduces the ruler's rents. Furthermore, a more powerful opposition might use those resources against the government. Sharing power may enable rivals to gain a foothold in the existing state apparatus. This position improves their prospects for overthrowing the ruler via a coup, rather than having to build a private military to challenge the government from the outside (Roessler 2016; Paine 2020). Similarly, repression does not necessarily breed dissent by societal groups. Rulers that are highly effective at repression can marginalize the opposition and eliminate anti-regime mobilization (Acemoglu and Robinson 2006; Gibilisco 2020), whereas sharing power might create an opportunity for the opposition to successfully rebel against the regime.

These ambiguous implications arise because different strands of the literature adopt divergent assumptions about the consequences of powersharing. In this paper, I develop a dynamic model that incorporates two main consequences into a unified theoretical framework, which reconciles these apparent contradictions. In the model, the ruler chooses how much power to share with the opposition, subject to exogenously fixed upper and lower bounds. Choosing a higher level of de facto power enables the opposition (1) to mobilize against the ruler in a higher percentage of periods and (2) to win a conflict against the ruler with higher probability. These two consequences yield countervailing effects, consistent with ambiguous implications in existing research. However, studying them jointly shows that only an intermediate-strong opposition initiates conflict. A weak opposition never fights because his probability of winning a conflict is very low. Nor does a strong opposition fight; frequent mobilization facilitates considerable concessions without fighting. Thus, neither sharing power nor excluding the opposition unambiguously promotes regime survival.

Despite the benefits of powersharing proposed by scholars of authoritarian institutions and of social revolutions, the ruler will share more than the minimum amount of power only in limited circumstances. The ruler considers sharing power only if doing so pushes the regime from a conflictual to a peaceful path. However, if the lost rents from sharing power are too high, the ruler will exclude maximally *despite knowing she could have shared enough power to guarantee survival*. Kleptocratic rulers with lucrative rent streams and moderately effective repressive units may expect to eventually face a revolution. However, by capitalizing on their leeway to exclude, they push societal challenges into the future and lower their chance of succeeding.

In other circumstances, sharing power has the opposite effect: pushing the regime from a peaceful to conflictual path. This effect creates regime-preserving incentives for maximum exclusion. In fact, *greater leeway to exclude may facilitate survival*, e.g., many electoral authoritarian regimes with recent ruler turnover that fall into conflict traps. They are limited in how much power they can credibly share with the opposition, but cannot repress the opposition to the point where they are too weak to coercively challenge the regime.

Relative to the formal literature, I build off conflict bargaining models with exogenous shifts in the distribution of power (Powell 2004; Acemoglu and Robinson 2006), but depart in two important ways. First, in my model, the frequency of mobilization and the probability of the opposition winning a conflict depend on a common variable, the opposition's de facto power, which generates countervailing effects of sharing power. Second, by allowing the ruler to choose the opposition's de facto power, I endogenize the distribution of power, which is exogenous in many models (although see Powell 2013). To isolate these elements of the powersharing tradeoff, I elide other important facets, e.g., incomplete information (Svolik 2012, ch. 4; Luo and Rozenas 2019), coercive agency problems (Tyson 2018; Dragu and Przeworski 2019), democratic reforms (Acemoglu and Robinson 2006; Dower et al. 2018), and post-exit fate (Debs 2016).

1 Model Setup

Sequence of moves. Two players, a ruler R and an opposition O, interact over an infinite horizon and share a common discount factor $\delta \in (0,1)$. Before the first period, R makes a one-time choice that determines O's de facto power for the remainder of the game. Specifically, R chooses $p \in \left[p^{\text{min}}, p^{\text{max}}\right]$, for $0 < p^{\text{min}} <$

$p^{\max} < 1$. I interpret $p = p^{\min}$ as maximum exclusion/repression, i.e., the most R can reduce O's de facto power, and $p = p^{\max}$ as maximum powersharing, i.e., the most power R can shift toward O.

After R chooses p, the following interaction occurs in each period (if no prior conflict). With probability $\mu(p) \in (0, 1)$, Nature allows O to mobilize, and with probability $1 - \mu(p)$, O does not mobilize. In any period t that O does not mobilize, R consumes the entire per-period budget of 1, O consumes 0, and the game moves to the next period. If O mobilizes in period t, then R offers $x_t \in [0, 1]$, to which O responds by either accepting or fighting. By accepting, O consumes x_t, R consumes $1 - x_t$, and the game moves to the next period. Fighting ends the game. O wins with probability p, and R with probability $1 - p$. The winner consumes $1 - \phi$ in every period and the loser consumes 0, and $\phi > 0$ expresses costly fighting.

Two assumptions link p to de facto power. As mentioned, higher p means O wins a fight with higher probability. Higher p also increases the percentage of periods in which O mobilizes. I assume an exponential functional form, $\mu(p) = p^\gamma$, which satisfies several intuitive properties. Higher p implies greater ability to mobilize, $\mu'(p) > 0$. At the corners, a perfectly weak O never mobilizes, $\mu(0) = 0$, and a perfectly strong O always mobilizes, $\mu(1) = 1$. Finally, γ parameterizes the rate at which $\mu(p)$ increases in p. Figure A.1 depicts two curves with different γ. For the solid curve, γ is higher and, consequently, increases in p translate less rapidly into gains in $\mu(p)$. Two technical assumptions are needed for conflict to possibly occur in equilibrium: $\gamma > \frac{1}{\delta}$ (i.e., $\mu(p)$ is "convex enough") and $\phi < \delta$ (i.e., conflict not too destructive).

Discussion. In reality, rulers can make many choices that affect the distribution of power over a longer horizon. To facilitate exclusion, a ruler can build a large army to subjugate the opposition.[1] In the opposite direction of sharing power, a ruler could name someone from outside her inner circle as either Minister of Defense or head of a mass party. These positions provide opposition leaders with a secure organizational base that conveys de facto power. However, rulers cannot completely marginalize the opposition nor share unlimited power. Tighter constraints on marginalizing the opposition arise from limitations that the ruler faces to creating a large army or to inducing its military to exercise repression. Rulers also vary in how much power they can shift to the opposition without alienating members of their inner circle, and in how credibly they can promise to allow the opposition to perpetually retain their cabinet positions.

[1] I omit any cost for R to implement low p (e.g., the costs of creating a large military). I show that there are parameter ranges in which R does not choose $p = p^{\min}$ despite the absence of fixed costs. Thus, introducing a cost parameter would complicate the analysis without qualitatively changing the findings.

Consistent with assuming that the powersharing choice occurs at the outset of the game, Greitens (2016) and Geddes et al. (2018) show that rulers face their greatest opportunities to personalize their regime early in their tenure. However, although R chooses p only once, the optimal strategies are identical if R chose p at the beginning of every period because all periods in which the history does not feature a conflict are strategically identical. Additionally, by modeling a single-shot powersharing choice, I do not focus on the intermediate steps that rulers often pursue to concentrate power. These are perhaps more relevant for studying a ruler's interaction with members of its inner circle (Svolik 2012, ch. 3) than with opposition groups. Acemoglu et al. (2012) and Luo and Przeworski (2019) model aspects of dynamic power consolidation.

Conflicts to overthrow a government can take various forms, although I do not explicitly distinguish these in the model. Excluded factions (i.e., low de facto power) must create private armies and fight their way to the capital via a rebellion (which may culminate into a broader social revolution), whereas factions with access to power in the central government (i.e., high de facto power) can use the existing military to stage a coup. Consequently, when viable, coups tend to succeed with higher probability (Roessler 2016, 37). Thus, it is natural to interpret the conflict as a rebellion if p is low and as a coup if p is high.

2 ANALYSIS

When does conflict occur? The first piece to understanding the ruler's optimal choice is characterizing the relationship between p and conflict. There are two possible paths of play in a Markov Perfect Equilibrium. Along a peaceful path, in every period that O mobilizes, R makes the same offer x, which O accepts. Along a conflictual path, O fights in the first mobilization period. The relationship between the opposition's de facto power and equilibrium conflict is $\cap$-shaped. A weak opposition, formalized as $p < \underline{p}$, never fights because his probability of winning a conflict is very low. A strong opposition ($p > \overline{p}$) also forgoes fighting; frequent mobilization facilitates considerable concessions.

In a peaceful path of play, the following recursive equation characterizes O's lifetime expected consumption. In any period t, with probability $\mu(p)$, O mobilizes and consumes x. With complementary probability, he does not mobilize and consumes 0. Either way, the game moves to the next, identical period.

$$V^O = \mu(p) \cdot x + \delta \cdot V^O. \tag{1}$$

To induce O to accept in a mobilization period, O's lifetime expected utility to consuming x in period t and then continuing along the peaceful path must weakly exceed his expected utility to fighting.

$$\underbrace{x + \delta \cdot V^O}_{\text{Accept}} \geq \underbrace{p \cdot \frac{1-\phi}{1-\delta}}_{\text{Fight}}. \tag{2}$$

The equilibrium offer satisfies this constraint with equality because R can profitably deviate downward from any x that strictly satisfies Equation 2. And, if it is possible to satisfy this inequality (for a given p), then R cannot profitably deviate downward to an x that violates it because R makes the bargaining offers and conflict is costly. Solving the system created by Equations 1 and 2 (solved with equality) yields:

$$x^*(p) = \frac{p \cdot (1-\phi)}{1 - \delta \cdot \big(1 - \mu(p)\big)} \tag{3}$$

R cannot offer more than 1, the entire per-period budget, in any period. Therefore, the equilibrium path of play is peaceful if $x^* < 1$, and conflict occurs in the first mobilization period if $x^* > 1$. Why might O fight? To explain the intuition, it is useful to understand how p and μ independently affect prospects for conflict, before analyzing the overall effect of p on both the probability of winning and $\mu(p)$. If $\mu = 1$, then O mobilizes in every period. This mitigates R's inability to commit to making offers in non-mobilization periods, and hence $x < 1$ exist that satisfy Equation 2. However, lower μ increases the number of periods in which O consumes nothing, and hence he demands more in each mobilization period as compensation for forgoing his temporary opportunity to fight. For low enough μ, this mechanism pushes $x^* > 1$. Conflict occurs because O anticipates a large adverse shift in the future distribution of power, a general mechanism that triggers fighting (see Powell 2004). However, even for $\mu \to 0$, equilibrium fighting requires large-enough p. Otherwise, O's opportunity cost to forgoing conflict is low, which drives $x^* < 1$. The dark region in Figure A.2 shows values of p and μ (assuming μ is independent of p) in which conflict occurs.

Equation 4 highlights two countervailing effects of p on x^*. The direct *opportunity effect* is that higher p increases O's demand in a mobilization period by increasing its opportunities to win a conflict. The indirect *credibility effect* lowers x^*. More frequent mobilization periods raise O's lifetime expected utility to a peaceful path. R's promises to redistribute are more credible because $\mu(p)$ increases in p.

$$\frac{dx^*}{dp} = \frac{1-\phi}{1-\delta \cdot \big(1-\mu(p)\big)} \cdot \left[\underbrace{1}_{\text{Opportunity effect (+)}} \underbrace{- \frac{\delta \cdot p}{1 - \delta \cdot \big(1-\mu(p)\big)} \cdot \mu'(p)}_{\text{Credibility effect (–)}} \right] \tag{4}$$

Combining these mechanisms shows that p exerts a $\cap$-shaped effect on equilibrium conflict. Whereas the opportunity effect is constant in p, the credibility effect increases in magnitude for larger p. Thus, as Figure A.3 shows, the relationship between x^* and p is $\cap$-shaped. Because higher γ shifts up x^*, for high-enough γ, then there exists a non-empty range $p \in \left(\underline{p}, \overline{p}\right)$ in which $x^* > 1$ and conflict occurs.[2] Because $0 < \underline{p} < \overline{p} < 1$, either low or high p suffices for peace (see Lemma B.1). Proposition B.1 states the equilibrium strategy profile for fixed p, and Appendix B presents and proves every formal statement.

Ruler's utility along each path of play. The second piece to understanding the ruler's optimal choice is characterizing her utility along a fixed path of play. There are two straightforward results, which Lemma B.2 formalizes. First, for fixed p, R strictly prefers a peaceful over a conflictual path. Second, for a fixed path of play (either peaceful or conflictual), R's lifetime expected utility strictly decreases in p.

On a peaceful path, R consumes 1 in $1 - \mu(p)$ percent of periods and $1 - x^*(p)$ in the remainder:

$$V^R_{\text{peace}} = 1 - \mu(p) \cdot x^*(p) + \delta \cdot V^R_{\text{peace}} \implies V^R_{\text{peace}} = \frac{1 - \mu(p) \cdot x^*(p)}{1 - \delta}. \tag{5}$$

On a conflictual path, R consumes 1 in every period until the first time that O mobilizes, when she consumes her conflict continuation value:

$$V^R_{\text{war}} = \left[1 - \mu(p)\right] \cdot \left(1 + \delta \cdot V^R_{\text{war}}\right) + \mu(p) \cdot (1-p) \cdot \frac{1-\phi}{1-\delta} \implies V^R_{\text{war}} = \frac{(1-\delta) \cdot \left[1 - \mu(p)\right] + \mu(p) \cdot (1-p) \cdot (1-\phi)}{(1-\delta) \cdot \left[1 - \delta \cdot \left(1 - \mu(p)\right)\right]}. \tag{6}$$

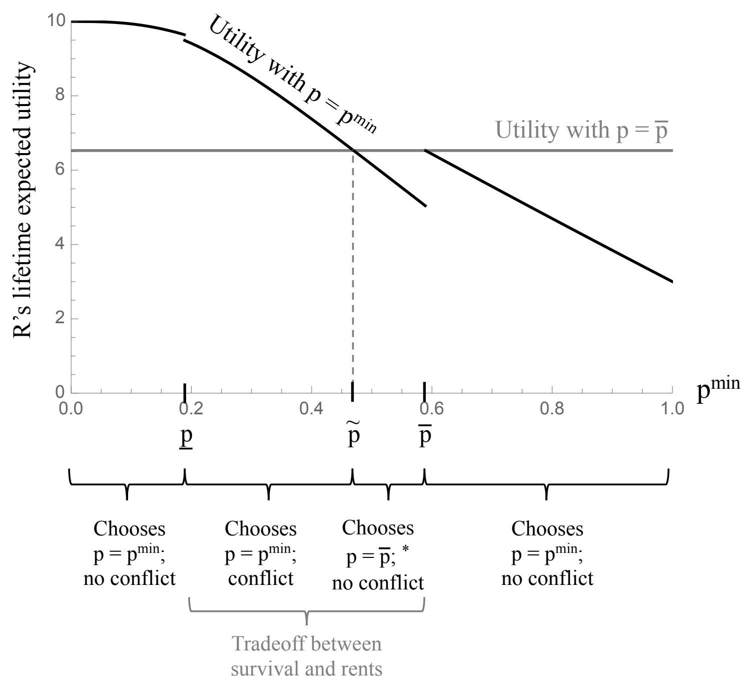
All else equal, R prefers peaceful bargaining because she makes the offers and conflict is costly, a standard result in these types of models. Regarding the effect of p on R's utility along each path of play, for V^R_{war}, higher p exerts two effects that each decrease R's utility: higher probability of losing the conflict, and fewer periods in expectation until the conflict occurs because $\mu'(p) > 0$. For V^R_{peace}, higher p directly decreases R's utility by increasing O's demand in a mobilization period. There is also a countervailing effect—higher

[2] For a more general function $\mu(p)$, a necessary condition for a conflict equilibrium is for $\mu(p)$ to be strictly convex with $\mu''(p)$ large-enough in magnitude. We need convexity because if $\mu(p)$ responds "too quickly" to changes in p, then the credibility effect will always swamp the mobilization effect and we always have $x^* < 1$. Because the ruler will necessarily choose $p = p^{\text{min}}$ if the path of play is peaceful at $p = p^{\text{min}}$ (see below), convex $\mu(p)$ is another (perhaps unexpected) necessary condition for equilibrium powersharing.

$\mu(p)$ enables R to offer less in each mobilization period—but the overall effect of p is negative.

Optimal powersharing. Now I analyze R's powersharing choice. R's lifetime expected utility is a piecewise function of p because of the intermediate conflict range; but, as just showed, conditional on either peace or conflict, R's utility strictly decreases in p. Figure 1 depicts this relationship and summarizes the intuition for the following discussion. Proposition B.2 characterizes the full equilibrium strategy profile.

Figure 1: Optimal Powersharing



Same parameter values as solid line in Fig. A.3. *Chooses $p = \overline{p}$ if $p^{\max} > \overline{p}$. Otherwise, chooses $p = p^{\min}$ and conflict occurs.

R cannot choose any $p \in [0, 1]$. Instead, she is constrained to choose $p \in \left[p^{\min}, p^{\max}\right]$. Various pros and cons of sharing power guide R's optimal choice. There are three sets of parameter values in which R chooses maximum exclusion, i.e., $p = p^{\min}$, albeit each for a different reason. First, $p^{\min} > \overline{p}$. Here, the equilibrium is peaceful regardless of R's choice. She faces severe-enough constraints on exclusion that p cannot fall into the intermediate conflict range. Given this, there is no benefit for R to share more power than $p^{\min}$, which would simply *diminish her rents* by allowing O to mobilize more frequently.

Second, $p^{\min} < \underline{p}$. As in the previous range, there is no conflict at $p = p^{\min}$, which removes any incentives to share more power than $p^{\min}$. Here, however, there is an additional incentive to exclude. If R raises p to some $p \in \left[\underline{p}, \overline{p}\right]$, then conflict occurs. Thus, *sharing power would trigger conflict*, which reinforces incentives for maximum exclusion. Although R excludes maximally and conflict does not occur in both ranges, the interpretation differs. For $p^{\min} < \underline{p}$, R is highly effective at repressing. For $p^{\min} > \overline{p}$, the ruler faces severe constraints on exclusion—despite excluding maximally, she still makes considerable concessions.

Third, R faces a tradeoff between survival and rents if conflict occurs under maximum feasible exclusion but not at maximum feasible powersharing, $\underline{p} < p^{\min} < \overline{p} < p^{\max}$. Choosing $p = p^{\min}$ maximizes the expected number of periods until O can mobilize, hence maximizing rents. By contrast, choosing any $p \geq \overline{p}$ results in O mobilizing earlier in the game, but peaceful bargaining rather than conflict will occur in mobilization periods. This benefits R by avoiding the surplus destroyed by fighting.

For p close to $\underline{p}$, the opportunity cost (in terms of lost rents) is too high for R to jump to $p = \overline{p}$.[3] Thus, R excludes maximally *despite knowing that sharing power would have guaranteed survival*. By contrast, for p close to $\overline{p}$, the opportunity cost of sharing power is lower. This is the one region in which R shares power. Given the constraints on exclusion that prevent her from dropping p further, the benefits from preventing conflict outweigh the lost rents. The threshold is $\tilde{p}$, formalized in Proposition B.2.

These results also yield implications for the two distinct parameter ranges in which conflict occurs in equilibrium. The first, as just discussed, is when $p^{\min}$ slightly exceeds $\underline{p}$. R is not effective enough at repression to be able to prevent conflict when excluding maximally, but is effective enough that the rent-based opportunity cost of sharing power is very high. Here, *lower effectiveness at repression would prevent conflict* because of a strategic selection effect: higher $p^{\min}$ would cause R to jump up to $p = \overline{p}$.

Second, suppose $p^{\max} < \overline{p}$. Hence, R is sufficiently constrained in the powersharing direction (perhaps because sharing more power with the opposition would trigger overthrow by unmodeled members of the inner circle) that maximal powersharing leaves her in the intermediate conflict range. Thus, if R also faces considerable constraints on exclusion, $p^{\min} > \underline{p}$, then conflict occurs regardless of R's choice. Here, *higher effectiveness at repression would prevent conflict*. This is the case denoted with an asterisk in Figure 1.

3 Discussion

Although exclusionary regimes may leave the opposition with no alternative but to rebel, sharing power concedes rents and may embolden anti-regime challenges. I analyzed a dynamic model in which the ruler

[3]The previous results explain why, if R moves in the direction of sharing power, she will choose the minimum amount needed to induce peace, $p = \overline{p}$.

chooses the opposition's de facto power. The ruler does not maximize prospects for survival, nor necessarily excludes maximally. Instead, there are two particularly interesting parameter ranges.

First, when faced with a tradeoff between survival and rents, the ruler might repress heavily—despite eventually triggering conflict—to gain more rents, $p \in [\underline{p}, \tilde{p}]$.[4] This relates to arguments that exclusionary and repressive authoritarian regimes often leave "no other way out" than violence for societal actors (Goodwin and Skocpol 1989; Goodwin 2001). However, these theories do not carefully discuss rulers' strategic incentives, nor explain why a dictator would *deliberately* pursue a policy that raises prospects for revolution. The countervailing effects of powersharing in the model resolve these puzzles. Kleptocratic institutions provide a lucrative stream of rents for the ruler. Economic controls include selective access to essential services, government-owned monopolies, and property confiscation (Chehabi and Linz 1998, 22). Many personalist regimes also have only moderately competent militaries; their soldiers will fight for the regime, but they are selected for affinity to the ruler rather than competence, e.g., Alawites in Syria. Here, p^{min} is low enough to induce the leader to gamble that she can survive a revolution—but she cannot prevent the revolt.[5]

Second, other regimes face the opposite problem: sharing power triggers conflict. Consider cases in which an opposition coalition electorally defeats the incumbent dictator, or powersharing regimes following civil war settlements (see, e.g., White 2020). Many of these regimes can credibly commit to retaining neither military officers appointed during the previous authoritarian regime nor new officers temporarily brought into the military ($p^{\text{max}} < \overline{p}$). However, they also lack the type of coup-proofing institutions that would eliminate the coup threat ($p^{\text{min}} > \underline{p}$). In these cases, perversely, greater ability to eliminate rivals would facilitate regime survival. This path, for example, corresponds with failed democratic attempts in Niger and Central African Republic in the 1990s. Overall, these theoretical results should help to inform future theoretical and empirical research on the causes and consequences of authoritarian powersharing.

[4]Shadmehr (2015) characterizes a related tradeoff in a distinct strategic setting where the opposition chooses the extremity of its agenda. In his model, the ruler may repress heavily to decrease the likelihood that revolutions succeed—despite causing successful revolutions to be more extreme.

[5]By contrast, many regimes that themselves emerged from revolution do not trade off between survival and rents. Communist China and the Soviet Union maintained large, effective armies that weakened societal challengers. Hence, $p < p^{\text{min}}$, and rulers could *prevent* conflict by maximally excluding the opposition.

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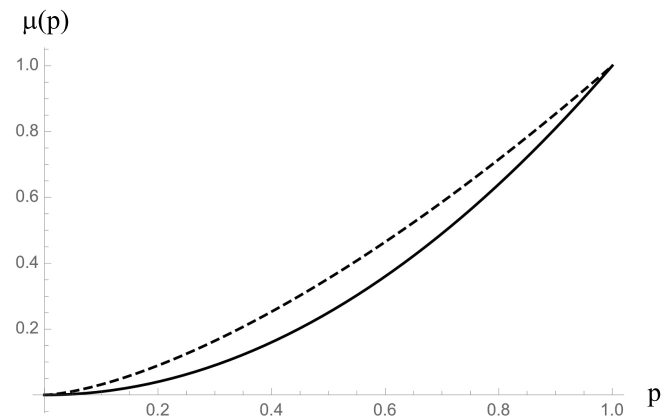
Online Appendix

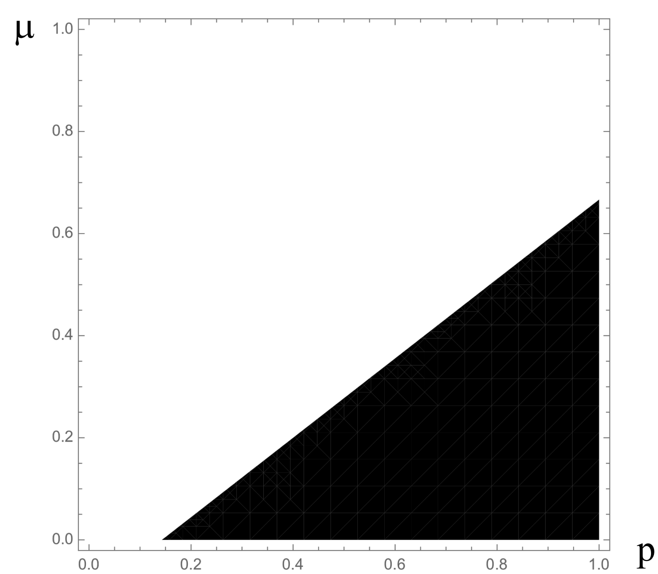
A Additional Figures

Figure A.1: Frequency of Periods in Which Opposition Can Mobilize



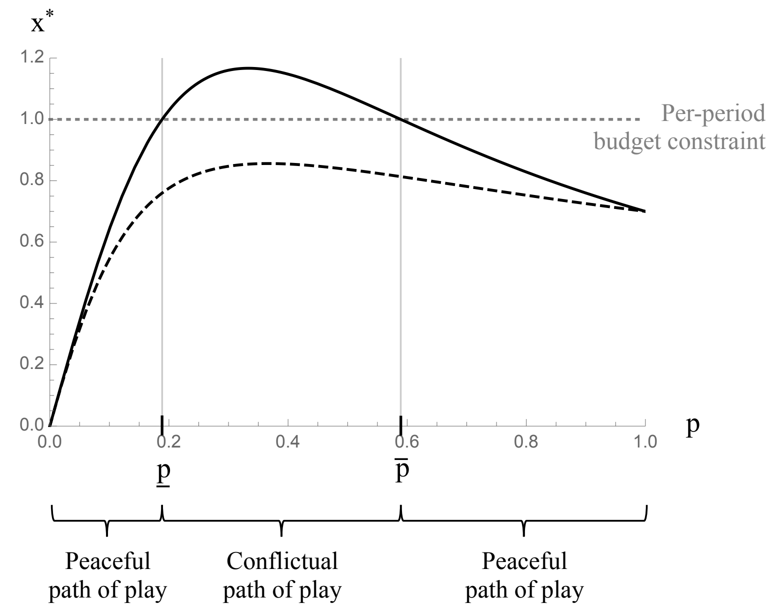
Notes: The dashed curve sets $\gamma = 1.5$ and the solid curve sets $\gamma = 2$.

Figure A.2: Conditions for Equilibrium Conflict



Notes: This figure sets $\phi = 0.3$ and $\delta = 0.9$, and assumes μ is independent of p. In the dark region, $x^* > 1$ and conflict occurs in equilibrium; and otherwise $x^* < 1$, and the equilibrium path of play is peaceful.

Figure A.3: Equilibrium Offer



Notes: This figure uses the same parameters as Figures A.1 and A.2. For the dashed curve, $\gamma < \hat{\gamma}$ (see Lemma B.1), and hence fighting does not occur for any value of p, whereas the black curve satisfies $\gamma > \hat{\gamma}$.

B Formal Statements and Proofs

Lemma B.1 (Opposition's de facto power and conflictual path of play)**.**

Part a. *A unique $\hat{p} \in (0,1)$ exists that maximizes x^*.*

Part b. *If $\delta > \phi$, then a threshold $\hat{\gamma} > \frac{1}{\delta}$ exists such that if $\gamma \in \left(\frac{1}{\delta}, \hat{\gamma}\right)$, then $x^*(\hat{p}) < 1$; and if $\gamma > \hat{\gamma}$, then $x^*(\hat{p}) > 1$.*

Part c. *Suppose $\gamma > \hat{\gamma}$. Then unique thresholds $0 < \underline{p} < \hat{p} < \overline{p} < 1$ exist such that if $p \in \left(\underline{p}, \overline{p}\right)$, then $x^*(p) > 1$; and otherwise $x^*(p) < 1$.*

Proof of Lemma B.1, part a. Setting the right-hand side of Equation 4 equal to 0 and solving yields $p = \hat{p} \equiv \left(\frac{1-\delta}{\delta\cdot(\gamma-1)}\right)^{\frac{1}{\gamma}}$. It is straightforward to show that Equation 4 is strictly positive for all $p < \hat{p}$ and strictly negative for all $p > \hat{p}$, which proves that $\hat{p}$ is the unique maximizer. Setting $\hat{p} < 1$ simplifies to $\gamma > \frac{1}{\delta}$, assumed in the setup. Setting $\hat{p} > 0$ simplifies to $\gamma > 1$, which follows from assuming $\gamma > \frac{1}{\delta}$ and $\delta < 1$.

Proof of part b. Given $\hat{p}$ defined in part a, can implicitly characterize $\hat{\gamma}$ as:

$$x^*\big(\hat{p}(\hat{\gamma})\big) \equiv \frac{\hat{p}(\hat{\gamma})\cdot(1-\phi)}{1-\delta\cdot\big(1-\hat{p}(\hat{\gamma})^{\hat{\gamma}}\big)} = 1$$

To establish the boundary conditions, $x^*\big(\hat{p}(\frac{1}{\delta})\big) = 1 - \phi < 1$; and $\lim_{\gamma \to \infty} x^*\big(\hat{p}(\gamma)\big) = \frac{1-\phi}{1-\delta} > 1$, where the last inequality follows from assuming $\delta > \phi$. Proving strict monotonicity for $\gamma > \frac{1}{\delta}$ establishes the strict threshold claim:

$$\frac{dx^*\big(\hat{p}(\gamma)\big)}{d\gamma} = -\frac{\left(\frac{1-\delta}{\delta\cdot(\gamma-1)}\right)^{\frac{1}{\gamma}} \cdot (\gamma - 1) \cdot (1-\phi) \cdot \ln\left(\frac{1-\delta}{\delta\cdot(\gamma-1)}\right)}{(1-\delta)\cdot\gamma^3}$$

Every term is positive except the natural log term, which is strictly negative for $\frac{1-\delta}{\delta\cdot(\gamma-1)} < 1 \implies \gamma > \frac{1}{\delta}$. Thus, the overall expression is strictly positive given the negative sign in front of it.

Proof of part c. To establish boundary conditions, $x^*(0) = 0$ and $x^*(1) = 1 - \phi$, both of which are strictly less than 1; and I am assuming $x^*(\hat{p}) > 1$. The exponential functional form implies that $\mu(p)$ is continuous in p within the assumed parameter values, and therefore the intermediate value theorem guarantees existence. Strict monotonicity on either side of $x^*(\hat{p})$, established in part b, establishes the unique threshold claims. Implicitly define $\underline{p}$ as the unique $p \in \big(0, \hat{p}\big)$ such that:

$$\frac{\underline{p}\cdot(1-\phi)}{1-\delta\cdot(1-\underline{p})^{\gamma}} = 1 \tag{B.1}$$

and $\overline{p}$ as the unique $p \in \big(\hat{p}, 1\big)$ such that:

$$\frac{\overline{p}\cdot(1-\phi)}{1-\delta\cdot(1-\overline{p})^{\gamma}} = 1 \tag{B.2}$$

■

Proposition B.1 (Equilibrium actions for fixed p)**.**

Part a. Peaceful path. *If $p \in \big(0, \underline{p}\big) \cup \big(\overline{p}, 1\big)$, then in every period t in which O mobilizes, R offers $x_t = x^*$ (see Equation 3) and O accepts any $x_t \geq x^*$. Along the equilibrium path, conflict never occurs.*

Part b. Conflictual path. *If $p \in \big(\underline{p}, \overline{p}\big)$, then in every period t in which O mobilizes, R offers any $x_t \in [0,1]$ and O rejects any offer. Along the equilibrium path, conflict occurs in the first mobilization period.*

Proof. The ranges of p follow from Lemma B.1. Given the discussion in the text, the only non-trivial condition to check for the bargaining behavior is that R cannot profitably deviate to low-balling O in a mobilization period, hence triggering a conflict. Thus, it suffices to show:

$$1 - x^* + \frac{\delta}{1-\delta}\cdot(1-\mu\cdot x^*) > (1-p)\cdot\frac{1-\phi}{1-\delta}.$$

Straightforward algebra shows that this rearranges to $\phi > 0$, which I assume is true. ■

Lemma B.2.

Part a. *For fixed p, $V^R_{peace} > V^R_{war}$.*

Part b. *V^R_{peace} and V^R_{war} each strictly decrease in p.*

Proof of part a.

$$V^R_{\text{peace}} - V^R_{\text{war}} = \frac{p \cdot \mu(p) \cdot \phi}{(1-\delta) \cdot \big[1-\delta \cdot \big(1-\mu(p)\big)\big]} > 0$$

Part b.

$$\frac{\partial V^R_{\text{peace}}}{\partial p} = -\frac{p^\gamma \cdot \big[(1-\delta) \cdot (1+\gamma) + \delta \cdot p^\gamma\big]}{(1-\delta) \cdot \big[1-\delta \cdot (1-p^\gamma)\big]^2} \cdot (1-\phi) < 0$$

$$\frac{\partial V^R_{\text{war}}}{\partial p} = -\frac{p^{\gamma-1} \cdot \big[(1-\delta) \cdot (1-\phi) \cdot (1+\gamma) \cdot p + \delta \cdot p^{\gamma+1} \cdot (1-\phi) + (1-\delta) \cdot \gamma \cdot \phi\big]}{(1-\delta) \cdot \big[1-\delta \cdot (1-p^\gamma)\big]^2} < 0$$

■

Proposition B.2 (Optimal powersharing and equilibrium conflict)**.**

Part a. *If $\gamma < \hat{\gamma}$, then R chooses $p = p^{min}$ and conflict does not occur in equilibrium.*

Part b. *If $\gamma > \hat{\gamma}$:*

1. *If $p^{min} < \underline{p}$, then R chooses $p = p^{min}$ and conflict does not occur in equilibrium.*

2. *If $p^{min} \in \big[\underline{p}, \tilde{p}\big]$, then R chooses $p = p^{min}$ and conflict occurs in equilibrium. The proof defines the unique threshold $\tilde{p} < \overline{p}$.*

3. *If $p^{min} \in \big[\tilde{p}, \overline{p}\big]$ and $p^{max} > \overline{p}$, then R chooses $p = \overline{p}$ and conflict does not occur in equilibrium. If instead $p^{max} < \overline{p}$, then R chooses $p = p^{min}$ and conflict occurs in equilibrium.*

4. *If $p^{min} > \overline{p}$, then R chooses $p = p^{min}$ and conflict does not occur in equilibrium.*

Proof of Proposition B.2. For parts a, b.1, the $p^{\max} < \overline{p}$ case of b.3, and b.4, the optimal choice follows directly from part b of Lemma B.2 and the statements for equilibrium conflict follow from Proposition B.1. For b.2 and the $p^{\max} > \overline{p}$ case of b.3, implicitly define $\tilde{p}$ as $V^R_{\text{peace}}(\overline{p}) = V^R_{\text{war}}(\tilde{p})$. We then know that $V^R_{\text{peace}}(\overline{p}) = V^R_{\text{war}}(\tilde{p}) < V^R_{\text{peace}}(\tilde{p})$, where the inequality follows from part a of Lemma B.2. Then, $\tilde{p} < \overline{p}$ follows because $V^R_{\text{peace}}(p)$ strictly decreases in p. The uniqueness of $\tilde{p}$ follows because $V^R_{\text{war}}(p)$ strictly decreases in p. ■